

South Dakota Game, Fish and Parks

Takes To The Air To Monitor Deer Populations

by Steve Griffin



White-tailed and mule deer populations are a valuable resource to the citizens and visitors of the State of South Dakota. Understanding deer population levels is a necessity for South Dakota Game, Fish, and Parks (SDGFP) to properly manage this resource. In past years, our agency has used such tools as tooth returns from hunter harvested deer, fall doe/fawn counts, hunter harvest statistics, and landowner tolerance to assist in managing these two species.

We still use most of these tools, but are attempting to create a new method to acquire better estimates of white-tailed and mule deer population in all areas and habitat types found in South Dakota.

Aerial censusing is a widely used method of estimating populations of large ungulates in North America. SDGFP currently use aerial survey methodology to estimate pronghorn population numbers using fixed wing aircraft, and we estimate mountain goat and bighorn sheep populations using helicopters in the Black Hills. SDGFP and South Dakota State University (SDSU) are also partnering on developing an aerial sightability model for use on elk in the Black Hills.

Since we have had good success with aerial surveys for other

species, SDGFP is cooperating with SDSU on three research projects in South Dakota to better understand our deer populations. SDSU graduate students are working on two white-tailed deer research projects in Clark and Bon Homme Counties. Game Fish and Parks personnel are working on the same type of research dealing with mule deer in Meade, Pennington, and Lyman counties. These studies are working towards developing an aerial sightability model that correct for any deer missed while counting deer using an airplane along fixed transect routes.

White-tailed deer were captured during the last two winters in eastern South Dakota. Permission was obtained from all landowners within each study sight. A total of 48 deer were radio-collared in Clark County, and 50 deer were radio-collared in Bon Homme County. In 2010, a total of 100 mule deer were radio-collared in 2 study sites in Meade/Pennington, and Lyman Counties. Most deer collared are females, with a few radio-collars placed on males. The majority of the deer in all study sites were captured using a helicopter. The use of the helicopter is much quicker than trying to capture deer using the old method of clover traps. As an example, 100 mule deer were captured and radio-collared in only 4 days, where conventional clover trapping or other methods may have taken months to accomplish. Mule deer capture also took place in areas that were not very accessible by vehicle, so the capture of these deer would have been very difficult without the use of the helicopter.

Developing an aerial survey methodology to count deer is one of the primary objectives of the research, but along the way we will collect other valuable information on our deer populations. This information collected will include home range sizes, migration patterns,



Successful release of a radio-collared deer.

and seasonal movements of deer. We will also be able to determine annual causes of mortality, and survival of both white-tailed and mule deer.

South Dakota is made up of a wide variety of habitat types, and deer utilize all of them. We have open agricultural fields, cattail sloughs, shelterbelts, and river break habitat that includes both hardwood and evergreen draws. Study sites were chosen carefully so that both white-tailed and mule deer were captured and radio-collared in all of these different habitats. The reason for conducting the study in various habitat types is to create an aerial sightability model that can be used in any area or habitat type in South Dakota. As an example, half of the mule deer were captured along areas of the Cheyenne River that consist of draws and coulees that have lots of cover made up of evergreen trees. The other 50 mule deer were captured in the Fort Pierre National Grasslands just south of Fort Pierre, SD. These are two very different habitat types that will allow us to create models to be used in most areas of South Dakota. Study sites were selected in the white-tailed deer research to accomplish the same objectives. Deer were captured in open agricultural and grassland habitats in Clark County, and in river break habitat in Bon Homme County.

As was stated earlier, this research is designed to create a methodology that can be used to count white-tailed deer and mule deer in any area of South Dakota. Variables recorded during the research are vegetative cover such as cattails and trees in shelterbelts in eastern South Dakota, and wooded draws and rough topography in Western South Dakota. These variables along with snow cover and deer activity will be added into the model to assist in obtaining the most accurate deer counts. These variables all will have an effect on deer visibility and be taken into consideration in the sightability models.

Currently, we are flying our surveys to develop the model in the winter months. Common sense tells us that we will be able to see deer better if there is snow on the ground, but we also know that we will not always have snow as a background, so surveys must also be conducted without snow cover. During January through April, there is much less vegetation on the ground, crops are harvested, and deciduous trees have lost their leaves so deer will not have as much cover to hide in. That is the premise; however, we will not know how the model will work until we collect the data.

During the research, transects are flown over the habitats that our

radio-collared deer are using. We are generally flying at about 200 feet above the ground and traveling around 90 miles per hour. Deer that are observed are counted and the different variables mentioned previously are recorded. As we are flying the surveys in the study area, we can determine if the deer observed have radio-collars or not. If we see a radio-collared deer, it is noted. At the end of the survey, all radio-collared deer that are not observed are located from the air using radio-telemetry gear, and the same variables are recorded. In the end, there is a lot of statistical work that goes into the model that will create an equation that can be used. We know that all deer will not be seen from the air, so the equation will allow a correction factor to be used to improve our estimates of the deer populations in certain areas.

Research studies and thus results will not be concluded for a few years, but when we complete the work, we are expecting to have an accurate method to count deer in both eastern and western South Dakota. Accurate counts in a wide variety of habitats and locations will assist us in estimating deer population numbers of both white-tailed and mule deer. This will lead us to better management of the deer resource for all South Dakotans.

